SECTION 16. HEIGHT MILITARY OVERLAY DISTRICT (MOD)

The only purpose and intent of this section is to promote cooperation between Cascade County, property owners, and Malmstrom Air Force Base in order to reduce potential conflicts and protect the current and future military missions and Missile Alert Facilities (MAFs) and Launch Facilities (LFs) of Malmstrom Air Force Base by restricting height of structures near these facilities as outlined in the Malmstrom Joint Land Use Study. Figures 4.1-2 Height Military Overlay District & 4.1-3 Proposed Height MODs are hereby incorporated into and made a part of these regulations.

16.1 MAFB RUNWAY AREA

The following height limits are based on the elevation of the helicopter runway at Malmstrom (3,526 ft.) which is based on the North American Vertical Datum of 1988 (NAVD 88).

MOD-A (Clear Zone Surface)

No structures greater than 50 feet in height.

MOD-B (Transitional Surface)

No structures greater than 50 feet in height.

MOD-C (Inner Horizontal Surface)

No structures greater than 150 feet in height.

MOD-D (Conical Surface)

No structures greater than 150 feet in height.

MOD-E (Approach/Departure Clearance Surface)

No structures greater than 50 feet in height.

MOD-F (Outer Horizontal Surface)

No structures greater than 500 feet in height.

Any proposed structures exceeding the above heights will require the approval of a variance by the Zoning Board of Adjustment. A copy of the application will be sent to Malmstrom for review and comments. Any comments or recommended mitigations will be forwarded to the Zoning Board of Adjustment to consider with their decision. If no comments are received within 15 working days, it will be determined Malmstrom's reviewing staff had no objections. A height variance may only be denied due to a concern expressed by the US Military that cannot be mitigated to the Military's satisfaction.

16.2 MISSILE ALERT FACILITIES (MAFS) AND LAUNCH FACILITIES (LFS)

No structures shall be allowed within the 1,200 foot buffer around each MAF and LF.

Any proposed structures over 50 feet in height between 1,200 feet and 2,400 feet of a MAF or LF will require the approval of a variance by the Zoning Board of Adjustment. A copy of the application will be sent to Malmstrom for review and comments. Any comments or recommended mitigations will be forwarded to the Zoning Board of Adjustment to consider with their decision. If no comments are received within 15 working days, it will be determined Malmstrom's reviewing staff had no objections. A height variance may only be denied due to a concern expressed by the US Military that cannot be mitigated to the Military's satisfaction.

16.3 EXCEPTIONS

A subdivision, rezoning and/or location/conformance permit application to accommodate a use inconsistent with the provisions of this section of these regulations shall not be approved unless the applicant places a covenant on the involved property wherein the property owner shall hold the City, County and Malmstrom Air Force Base harmless for any damages caused by normal and anticipated normal airport operations.

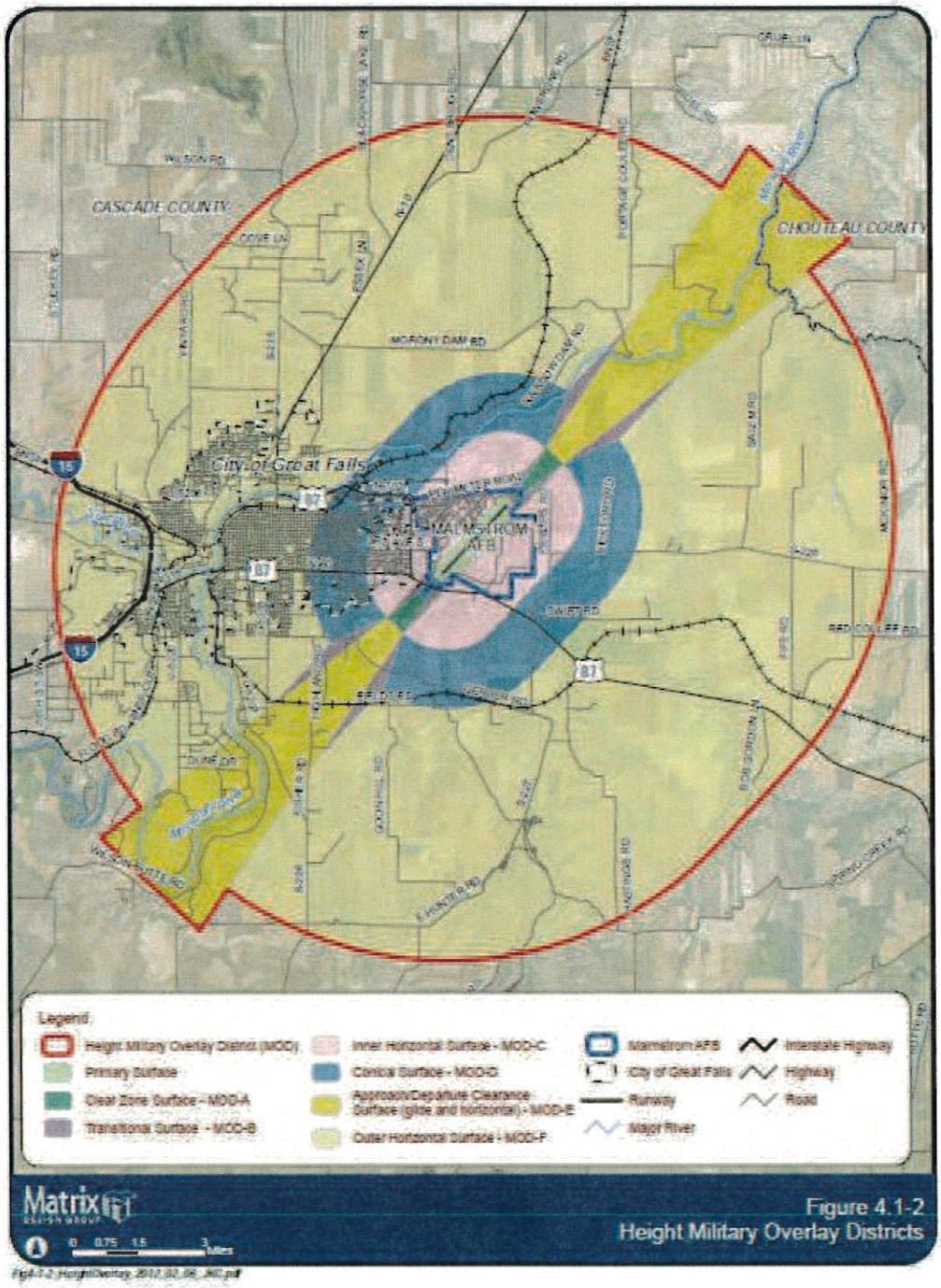


Figure 4.1-2
Height Military Overlay Districts

Fig4-1-2 HeightOverlay_2012_02_06_MC.pdf

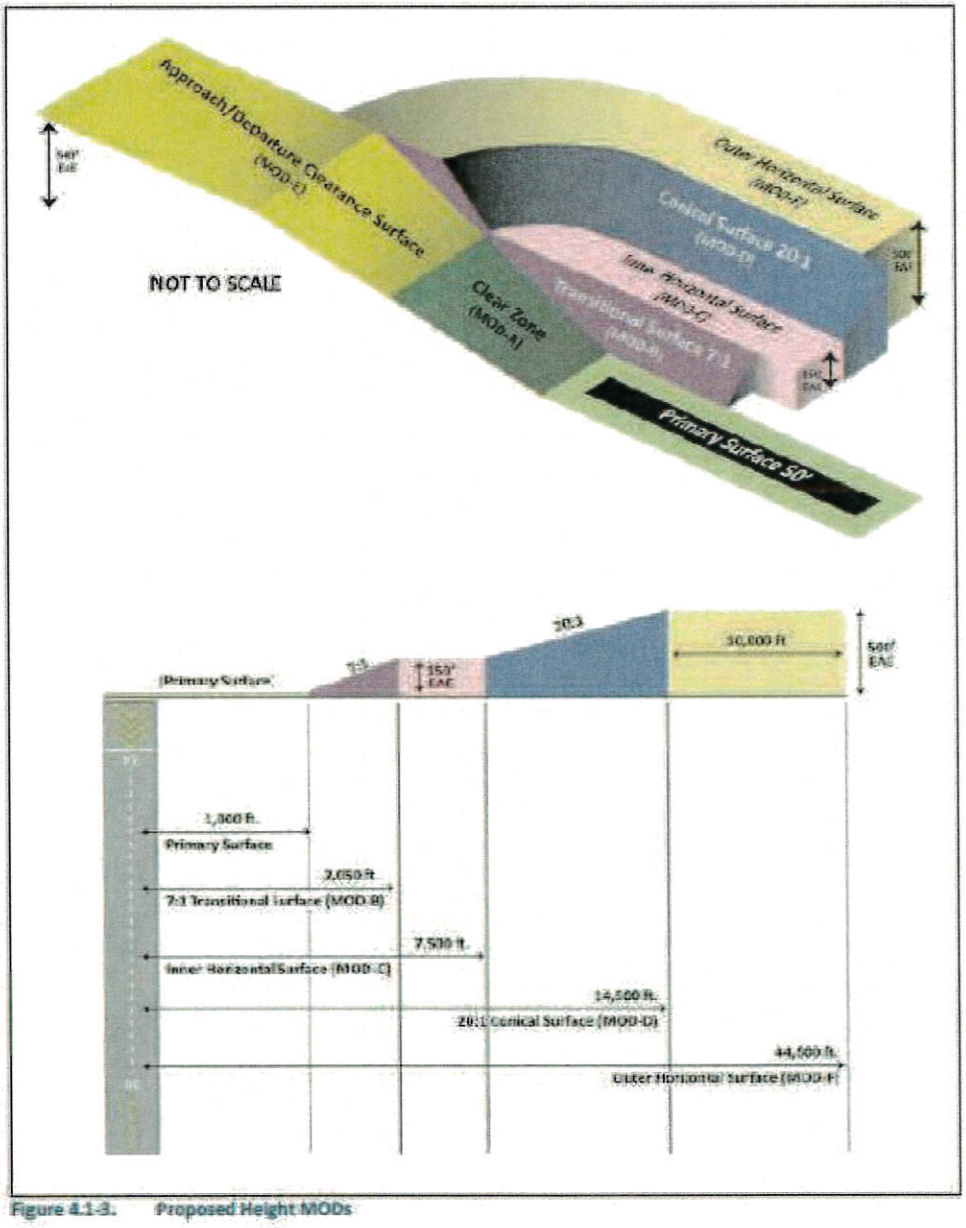


Figure 4.1-3. Proposed Height MODs

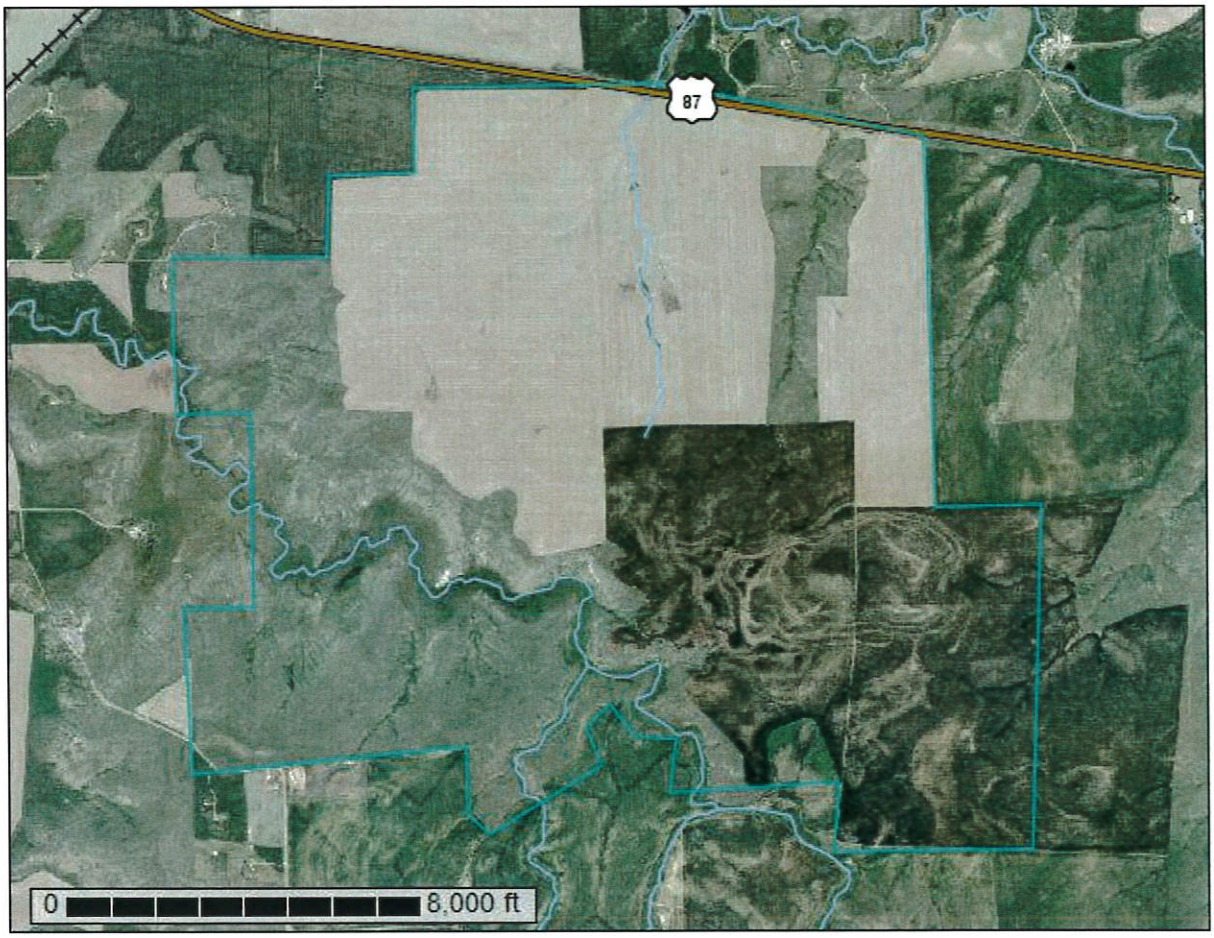
United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Cascade County Area, Montana



July 11, 2017

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

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204—Timberg-Castner complex, 2 to 10 percent slopes 39
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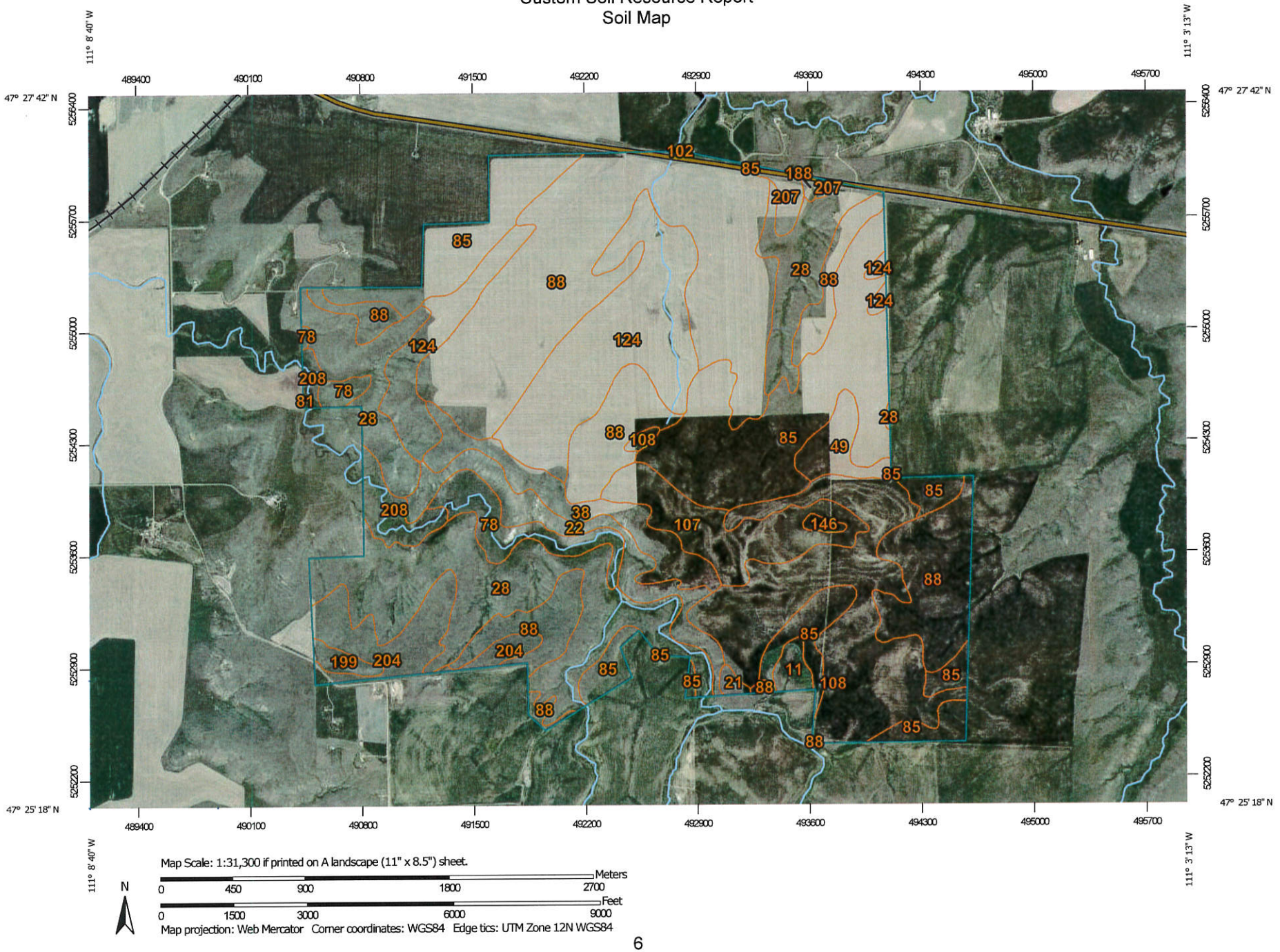
Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:31,300 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 — 450 — 900 — 1800 — 2700

Feet: 0 — 1500 — 3000 — 6000 — 9000

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 12N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Cascade County Area, Montana
Survey Area Data: Version 12, Sep 28, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Jun 13, 2010—Aug 26, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Cascade County Area, Montana (MT613)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
11	Acel silty clay loam, 0 to 2 percent slopes	14.7	0.5%
21	Big Timber-Castner complex, 8 to 30 percent slopes	5.7	0.2%
22	Big Timber-Castner complex, 30 to 70 percent slopes	88.5	3.0%
28	Bitton and Roy soils, 10 to 65 percent slopes	449.9	15.4%
38	Castner-Sinnigam complex, 2 to 15 percent slopes	86.8	3.0%
49	Darret-Castner complex, 2 to 8 percent slopes	37.4	1.3%
78	Fergus clay loam, 2 to 4 percent slopes	73.0	2.5%
81	Fergus-Absher silty clay loams, 0 to 2 percent slopes	0.1	0.0%
85	Gerber silty clay loam, 0 to 4 percent slopes	480.9	16.5%
88	Gerber-Lawther silty clays, 4 to 8 percent slopes	778.4	26.7%
102	Hillon clay loam, 15 to 45 percent slopes	0.0	0.0%
107	Ipano-Ticell loams, 0 to 4 percent slopes	113.1	3.9%
108	Ipano-Ticell loams, 4 to 10 percent slopes	299.3	10.3%
124	Lawther-Gerber complex, 8 to 15 percent slopes	316.7	10.9%
146	McKenzie silty clay loam	5.0	0.2%
188	Tally fine sandy loam, 8 to 15 percent slopes	3.3	0.1%
199	Ticell-Castner complex, 0 to 4 percent slopes	12.9	0.4%
204	Timberg-Castner complex, 2 to 10 percent slopes	88.8	3.0%
207	Twin Creek loam, 2 to 8 percent slopes	18.9	0.6%
208	Twin Creek silty clay loam, 0 to 2 percent slopes	44.8	1.5%
Totals for Area of Interest		**2,918.2**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas

shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Cascade County Area, Montana

11—Acel silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2sy7l
Elevation: 2,590 to 3,940 feet
Mean annual precipitation: 10 to 14 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 100 to 125 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Acel and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Acel

Setting

Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Glaciofluvial deposits

Typical profile

A - 0 to 6 inches: silty clay loam
Bt - 6 to 20 inches: silty clay
Bk - 20 to 66 inches: silty clay loam
2By - 66 to 79 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Gypsum, maximum in profile: 3 percent
Salinity, maximum in profile: Slightly saline (4.0 to 6.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 8.0
Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: Clayey (Cy) 10-14" p.z. (R052XN162MT)
Hydric soil rating: No

Minor Components

Nishon

Percent of map unit: 6 percent
Landform: Potholes
Landform position (three-dimensional): Dip
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Overflow (Ov) 10-14" p.z. (R052XN166MT)
Hydric soil rating: Yes

Ethridge

Percent of map unit: 3 percent
Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Hydric soil rating: No

Gerdrum

Percent of map unit: 1 percent
Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Claypan (Cp) 10-14" p.z. (R052XN086MT)
Hydric soil rating: No

21—Big Timber-Castner complex, 8 to 30 percent slopes

Map Unit Setting

National map unit symbol: cgrc
Elevation: 3,100 to 4,500 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Big timber and similar soils: 55 percent
Castner and similar soils: 30 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Big Timber

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: clay loam
C - 6 to 15 inches: gravelly clay loam
Cr - 15 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 30 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Description of Castner

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A1 - 0 to 6 inches: channery loam
A2 - 6 to 10 inches: extremely channery loam
Bk - 10 to 16 inches: extremely channery loam
R - 16 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 8 to 30 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Minor Components

Darret

Percent of map unit: 8 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) RRU 46-C 10-14" p.z. (R046XC503MT)
Hydric soil rating: No

Timberg

Percent of map unit: 7 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) RRU 46-C 10-14" p.z. (R046XC503MT)
Hydric soil rating: No

22—Big Timber-Castner complex, 30 to 70 percent slopes

Map Unit Setting

National map unit symbol: cgrq
Elevation: 3,100 to 4,500 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Big timber and similar soils: 55 percent
Castner and similar soils: 25 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Big Timber

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: clay loam
C - 6 to 15 inches: gravelly clay loam
Cr - 15 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 70 percent
Depth to restrictive feature: 10 to 20 inches to paralithic bedrock

Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Very low (about 2.3 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Description of Castner

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A1 - 0 to 6 inches: channery loam
A2 - 6 to 10 inches: extremely channery loam
Bk - 10 to 16 inches: extremely channery loam
R - 16 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 30 to 70 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Minor Components

Rock outcrop

Percent of map unit: 15 percent
Hydric soil rating: No

Roy

Percent of map unit: 5 percent

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

28—Bitton and Roy soils, 10 to 65 percent slopes

Map Unit Setting

National map unit symbol: cgsc
Elevation: 3,400 to 5,300 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Bitton and similar soils: 45 percent
Roy and similar soils: 45 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Bitton

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: stony loam
Bk - 7 to 40 inches: very stony loam
C - 40 to 60 inches: very stony clay loam

Properties and qualities

Slope: 10 to 65 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Moderate (about 6.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: B
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Description of Roy

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: stony loam
Bt - 6 to 32 inches: very stony clay loam
Bk - 32 to 60 inches: very stony sandy clay loam

Properties and qualities

Slope: 10 to 65 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 3.9 mmhos/cm)
Available water storage in profile: Low (about 4.9 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Minor Components

Castner

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Sinnigam

Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

38—Castner-Sinnigam complex, 2 to 15 percent slopes

Map Unit Setting

National map unit symbol: cgsq
Elevation: 3,400 to 4,600 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Castner and similar soils: 65 percent
Sinnigam and similar soils: 15 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Castner

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A1 - 0 to 6 inches: channery loam
A2 - 6 to 10 inches: extremely channery loam
Bk - 10 to 16 inches: extremely channery loam
R - 16 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Description of Sinnigam

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: very stony loam
Bt - 6 to 17 inches: very stony clay
R - 17 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 15 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Very low (about 1.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Minor Components

Absarokee

Percent of map unit: 7 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Roy

Percent of map unit: 7 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Reeder

Percent of map unit: 6 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

49—Darret-Castner complex, 2 to 8 percent slopes

Map Unit Setting

National map unit symbol: cgt3
Elevation: 3,400 to 4,700 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Darret and similar soils: 60 percent
Castner and similar soils: 25 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Darret

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: silty clay loam
Bt - 7 to 18 inches: silty clay
Bk - 18 to 28 inches: silty clay loam
Cr - 28 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 10 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 4.6 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: D
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Description of Castner

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A1 - 0 to 6 inches: channery loam
A2 - 6 to 10 inches: extremely channery loam
Bk - 10 to 16 inches: extremely channery loam
R - 16 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Minor Components

Big timber

Percent of map unit: 8 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Sinnigam

Percent of map unit: 7 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

78—Fergus clay loam, 2 to 4 percent slopes

Map Unit Setting

National map unit symbol: cgv4
Elevation: 3,300 to 4,200 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Fergus and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fergus

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: clay loam
Bt - 6 to 25 inches: silty clay loam
Bk - 25 to 42 inches: silty clay loam
C - 42 to 60 inches: silty clay loam

Properties and qualities

Slope: 2 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 3.9 mmhos/cm)
Available water storage in profile: High (about 9.2 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Minor Components

Twin creek

Percent of map unit: 10 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)
Hydric soil rating: No

81—Fergus-Absher silty clay loams, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: cgv8
Elevation: 3,400 to 4,000 feet
Mean annual precipitation: 15 to 19 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Fergus and similar soils: 70 percent
Absher and similar soils: 20 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Fergus

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: silty clay loam
Bt - 6 to 25 inches: silty clay loam
Bk - 25 to 42 inches: silty clay loam
C - 42 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 3.9 mmhos/cm)
Available water storage in profile: High (about 9.3 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Description of Absher

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

E - 0 to 2 inches: silty clay loam
Btn - 2 to 11 inches: clay
Bknyz - 11 to 60 inches: clay
Byz - 60 to 70 inches: stratified clay to loamy sand

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Strongly saline (16.0 to 32.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 70.0
Available water storage in profile: Low (about 4.0 inches)

Interpretive groups

Land capability classification (irrigated): 7s
Land capability classification (nonirrigated): 7s
Hydrologic Soil Group: D
Ecological site: Dense Clay (DC) 10-14" p.z. (R052XN172MT)
Hydric soil rating: No

Minor Components

Twin creek

Percent of map unit: 10 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-N 13-19" p.z. (R046XN252MT)
Hydric soil rating: No

85—Gerber silty clay loam, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: cgvd
Elevation: 3,000 to 4,000 feet
Mean annual precipitation: 11 to 18 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gerber and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gerber

Setting

Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: silty clay loam
Bt - 7 to 14 inches: silty clay
Bk - 14 to 32 inches: silty clay loam
C - 32 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Minor Components

Acel

Percent of map unit: 4 percent
Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Abor

Percent of map unit: 3 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Lawther

Percent of map unit: 3 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

88—Gerber-Lawther silty clays, 4 to 8 percent slopes

Map Unit Setting

National map unit symbol: cgvh
Elevation: 3,100 to 3,800 feet
Mean annual precipitation: 12 to 18 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Gerber and similar soils: 55 percent
Lawther and similar soils: 35 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Gerber

Setting

Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: silty clay
Bt - 7 to 14 inches: silty clay
Bk - 14 to 32 inches: silty clay loam
C - 32 to 60 inches: clay loam

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Description of Lawther

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: silty clay
Bw - 6 to 16 inches: silty clay
Bk - 16 to 35 inches: silty clay
By - 35 to 60 inches: silty clay

Properties and qualities

Slope: 4 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C

Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Minor Components

Acel

Percent of map unit: 10 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

102—Hillon clay loam, 15 to 45 percent slopes

Map Unit Setting

National map unit symbol: cgmj
Elevation: 3,000 to 3,800 feet
Mean annual precipitation: 11 to 18 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Hillon and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Hillon

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 5 inches: clay loam
Bk - 5 to 28 inches: clay loam
C - 28 to 60 inches: clay loam

Properties and qualities

Slope: 15 to 45 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent

Gypsum, maximum in profile: 3 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 10.2 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: C
Ecological site: Clayey-Steep (CyStp) 10-14" p.z. (R052XN164MT)
Hydric soil rating: No

Minor Components

Gerber

Percent of map unit: 4 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) 10-14" p.z. (R052XN162MT)
Hydric soil rating: No

Scobey

Percent of map unit: 4 percent
Landform: Till plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Silty (Si) 10-14" p.z. (R052XN161MT)
Hydric soil rating: No

Rock outcrop

Percent of map unit: 2 percent
Hydric soil rating: No

107—Ipano-Ticell loams, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: cgmp
Elevation: 3,500 to 4,600 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Ipano and similar soils: 55 percent
Ticell and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ipano

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 8 inches: loam
Bk1 - 8 to 19 inches: silt loam
2Bk2 - 19 to 34 inches: channery loam
2R - 34 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: C
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Description of Ticell

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: loam
Bk - 6 to 15 inches: silt loam
R - 15 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Hydric soil rating: No

Minor Components

Castner

Percent of map unit: 10 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Absarokee

Percent of map unit: 8 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Work

Percent of map unit: 7 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

108—Ipano-Ticell loams, 4 to 10 percent slopes

Map Unit Setting

National map unit symbol: cgmq
Elevation: 3,500 to 4,600 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Ipano and similar soils: 55 percent
Ticell and similar soils: 20 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ipano

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 8 inches: loam
Bk1 - 8 to 19 inches: silt loam
2Bk2 - 19 to 34 inches: channery loam
2R - 34 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 4 to 10 percent
Depth to restrictive feature: 20 to 40 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: Low (about 5.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Description of Ticell

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: loam
Bk - 6 to 15 inches: silt loam
R - 15 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 4 to 10 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Minor Components

Castner

Percent of map unit: 10 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Absarokee

Percent of map unit: 8 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Work

Percent of map unit: 7 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

124—Lawther-Gerber complex, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: cgn9
Elevation: 3,400 to 3,800 feet
Mean annual precipitation: 11 to 18 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Lawther and similar soils: 65 percent
Gerber and similar soils: 25 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Lawther

Setting

Landform: Terraces
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: silty clay
Bw - 6 to 16 inches: silty clay
Bk - 16 to 35 inches: silty clay
By - 35 to 60 inches: silty clay

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Gypsum, maximum in profile: 5 percent
Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: Moderate (about 8.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Clayey (Cy) 10-14" p.z. (R052XN162MT)
Hydric soil rating: No

Description of Gerber

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: silty clay loam
Bt - 7 to 14 inches: silty clay
Bk - 14 to 32 inches: silty clay loam
C - 32 to 60 inches: clay loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent

Salinity, maximum in profile: Nonsaline to slightly saline (0.0 to 4.0 mmhos/cm)
Available water storage in profile: High (about 9.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: Clayey (Cy) RRU 58A-E 15-19" p.z. (R058AE388MT)
Hydric soil rating: No

Minor Components

Hillon

Percent of map unit: 10 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Silty (Si) 10-14" p.z. (R052XN161MT)
Hydric soil rating: No

146—McKenzie silty clay loam

Map Unit Setting

National map unit symbol: cgp2
Elevation: 3,100 to 4,600 feet
Mean annual precipitation: 12 to 15 inches
Mean annual air temperature: 34 to 45 degrees F
Frost-free period: 110 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Mckenzie and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mckenzie

Setting

Landform: Depressions
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: silty clay loam
Bz1 - 7 to 14 inches: clay
Bz2 - 14 to 60 inches: clay

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches

Natural drainage class: Poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: About 0 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum in profile: 5 percent
Gypsum, maximum in profile: 3 percent
Salinity, maximum in profile: Very slightly saline to moderately saline (2.0 to 8.0 mmhos/cm)
Available water storage in profile: Moderate (about 9.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4w
Hydrologic Soil Group: D
Ecological site: Overflow (Ov) 10-14" p.z. (R052XN166MT)
Hydric soil rating: Yes

Minor Components

Acel

Percent of map unit: 10 percent
Landform: Outwash terraces
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

188—Tally fine sandy loam, 8 to 15 percent slopes

Map Unit Setting

National map unit symbol: cgqk
Elevation: 3,300 to 3,800 feet
Mean annual precipitation: 14 to 18 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Tally and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Tally

Setting

Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: fine sandy loam
Bw - 7 to 22 inches: fine sandy loam
Bk - 22 to 40 inches: fine sandy loam
C - 40 to 60 inches: sandy loam

Properties and qualities

Slope: 8 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): High (1.98 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Moderate (about 7.1 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: A
Ecological site: Draft Sandy (Sy) RRU 46-C 15-19" p.z. (R046XC505MT)
Hydric soil rating: No

Minor Components

Castner

Percent of map unit: 10 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

199—Ticell-Castner complex, 0 to 4 percent slopes

Map Unit Setting

National map unit symbol: cgqy
Elevation: 3,300 to 4,000 feet
Mean annual precipitation: 11 to 19 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 105 to 135 days
Farmland classification: Not prime farmland

Map Unit Composition

Ticell and similar soils: 45 percent
Castner and similar soils: 30 percent
Minor components: 25 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Ticell

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 6 inches: loam
Bk - 6 to 15 inches: silt loam
R - 15 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 30 percent
Available water storage in profile: Very low (about 2.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 6e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Description of Castner

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A1 - 0 to 6 inches: channery loam
A2 - 6 to 10 inches: extremely channery loam
Bk - 10 to 16 inches: extremely channery loam
R - 16 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 0 to 4 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e
Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Minor Components

Azaar

Percent of map unit: 10 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Sandy (Sy) RRU 46-C 15-19" p.z. (R046XC505MT)
Hydric soil rating: No

Ipano

Percent of map unit: 10 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Rock outcrop

Percent of map unit: 5 percent
Hydric soil rating: No

204—Timberg-Castner complex, 2 to 10 percent slopes

Map Unit Setting

National map unit symbol: cgr5
Elevation: 3,400 to 3,800 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 37 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Not prime farmland

Map Unit Composition

Timberg and similar soils: 60 percent
Castner and similar soils: 20 percent
Minor components: 20 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Timberg

Setting

Landform: Plains

Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: silty clay loam
Bw - 7 to 12 inches: silty clay loam
Bk - 12 to 35 inches: silty clay loam
Cr - 35 to 60 inches: weathered bedrock

Properties and qualities

Slope: 2 to 10 percent
Depth to restrictive feature: 20 to 40 inches to paralithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 3.9 mmhos/cm)
Available water storage in profile: Low (about 5.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: Clayey (Cy) RRU 46-C 10-14" p.z. (R046XC503MT)
Hydric soil rating: No

Description of Castner

Setting

Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A1 - 0 to 6 inches: channery loam
A2 - 6 to 10 inches: extremely channery loam
Bk - 10 to 16 inches: extremely channery loam
R - 16 to 60 inches: unweathered bedrock

Properties and qualities

Slope: 2 to 10 percent
Depth to restrictive feature: 10 to 20 inches to lithic bedrock
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 5.95 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Available water storage in profile: Very low (about 1.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 7e

Hydrologic Soil Group: D
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Minor Components

Bitton
Percent of map unit: 5 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Fergus
Percent of map unit: 5 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Ticell
Percent of map unit: 5 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Shallow (Sw) RRU 46-C 13-19" p.z. (R046XC506MT)
Hydric soil rating: No

Darret
Percent of map unit: 5 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) RRU 46-C 10-14" p.z. (R046XC503MT)
Hydric soil rating: No

207—Twin Creek loam, 2 to 8 percent slopes

Map Unit Setting
National map unit symbol: cgr8
Elevation: 3,300 to 4,200 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Farmland of statewide importance

Map Unit Composition
Twin creek and similar soils: 90 percent

Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Twin Creek

Setting

Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: loam
Bw - 7 to 25 inches: loam
Bk - 25 to 45 inches: loam
C - 45 to 60 inches: clay loam

Properties and qualities

Slope: 2 to 8 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B
Ecological site: Silty (Si) RRU 46-N 10-14" p.z. (R046XN236MT)
Hydric soil rating: No

Minor Components

Perma

Percent of map unit: 4 percent
Landform: Hills
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Fergus

Percent of map unit: 3 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Straw

Percent of map unit: 3 percent
Landform: Flood plains

Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

208—Twin Creek silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: cgr9
Elevation: 3,300 to 3,600 feet
Mean annual precipitation: 14 to 19 inches
Mean annual air temperature: 39 to 45 degrees F
Frost-free period: 105 to 130 days
Farmland classification: Farmland of statewide importance

Map Unit Composition

Twin creek and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Twin Creek

Setting

Landform: Stream terraces
Down-slope shape: Linear
Across-slope shape: Linear

Typical profile

A - 0 to 7 inches: silty clay loam
Bw - 7 to 25 inches: loam
Bk - 25 to 45 inches: loam
C - 45 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately high to high (0.57 to 1.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 35 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)
Available water storage in profile: High (about 9.6 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e
Hydrologic Soil Group: B

Ecological site: Silty (Si) RRU 46-N 10-14" p.z. (R046XN236MT)
Hydric soil rating: No

Minor Components

Fergus

Percent of map unit: 4 percent
Landform: Alluvial fans
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Clayey (Cy) RRU 46-N 13-19" p.z. (R046XN247MT)
Hydric soil rating: No

Straw

Percent of map unit: 4 percent
Landform: Flood plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Draft Silty (Si) RRU 46-C 13-19" p.z. (R046XC508MT)
Hydric soil rating: No

Timberg

Percent of map unit: 2 percent
Landform: Plains
Down-slope shape: Linear
Across-slope shape: Linear
Ecological site: Clayey (Cy) RRU 46-C 10-14" p.z. (R046XC503MT)
Hydric soil rating: No